



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

The earlier andesite has suffered extensive alteration, near the veins to quartz, sericite, and adularia; farther away to calcite and chlorite. The principal work of the altering waters was the formation of the veins. A detailed account of these changes is given, and a study of typical specimens leads to the conclusion that these waters were charged with an excess of silica and probably potash, with gold, silver, antimony, arsenic, copper, lead, zinc, sodium, sulphur, some chlorine and fluorine; but were notably deficient in iron. By comparison and microscopic studies of the later andesite it is concluded that these altering waters were charged with carbonic acid and sulphuretted hydrogen, and contained magnesia, iron and lime.

The composition of the waters indicated above does not seem to correspond to the composition which waters descending through the rock would have had. An eruption of andesite, followed by highly siliceous and potassic waters, deficient in iron, and an eruption of rhyolite followed by waters rich in lime, magnesia, and iron, present an antithesis which may give, according to the author, some clew to the origin of the waters. Two hypotheses of this origin are considered, an atmospheric and a magmatic. The author favors the latter view.

Besides a detailed discussion of the above-mentioned facts, Mr. Spurr has chapters on the descriptive geology of the several mines and prospects; the increase of temperature with depth in the mines, and concludes the report with a comparison of similar ore deposits elsewhere. F. D. M.

---

*Stratigraphy and Paleontology of the Upper Carboniferous Rocks of the Kansas Section.* By GEORGE I. ADAMS. (Bulletin of the U. S. Geological Survey, No. 211, 1903, pp. 1-72.)

*Tabulated List of Invertebrate Fossils from the Carboniferous Section of Kansas.* By GEORGE H. Girty. (Bulletin of the U. S. Geological Survey, No. 211, 1903, pp. 73-83.)

*Summary of the Fossil Plants Recorded from the Upper Carboniferous and Permian Formations of Kansas.* By DAVID WHITE. (Bulletin of the U. S. Geological Survey, No. 211, 1903, pp. 85-117.)

*Notes on the Permian Formations of Kansas.* By CHARLES S. PROSSER. (*American Geologist*, Vol. XXXVI, 1905, pp. 142-61.)

Several important contributions have been made lately to our knowledge of the much-debated section of the Upper Carboniferous of Kansas.

The standard Carboniferous Section for America may be regarded as the one which is so fully displayed in the Mississippi valley. It is in Kan-

sas that the most complete development of the upper part of the Carboniferous is found. In this locality the Upper Carboniferous limestones and the so-called Permian beds appear in unbroken sequence. It is unnecessary at this time to go into any of the details that have been for so many years the subject of lively debate. Professor Prosser has recently admirably summarized opinions expressed. What has been really needed in all this prolix discussion has been greater attention to critical data. The entire subject has been lately reviewed by Dr. G. I. Adams.

A most succinct and concise account is the recent memoir on the *Stratigraphy and Paleontology of the Upper Carboniferous Rocks of the Kansas Section*. In the main, Mr. Adams records the results of an attempt after extensive and direct work in the field, to rectify the confusion regarding the stratigraphy and the consequent interminable synonymy which has in Kansas arisen unchecked during the last decade. While it would have been very desirable to have had the same careful inquiry extended over Missouri, Iowa, Nebraska and Arkansas, the fact that it was not does not detract from the memoir under consideration. A comparison of the Kansas formations with their representatives of the region lying to the eastward would have proved of great value, and would have removed a considerable part of the synonymy which still remains in the Kansas area.

Not the least noticeable feature of the Adams bulletin is the nearly complete elimination of the classifications and the nomenclatures of Prosser and of Haworth. Whether or not the author has not gone too far along this line remains to be seen. The same question may be asked regarding the work of the pioneers in the Kansas region.

Dr. Adams recognizes, upon lithologic grounds, four main divisions of the Upper Carboniferous of the region. In order to avoid complications in nomenclature of the Carboniferous, he has thought it advisable not to give names to these divisions. There are: (1) lower shales and sandstones; (2) interstratified limestones, shales, and sandstones; (3) limestones interstratified principally with shales; (4) bluish and purplish shales. These four subdivisions are based wholly upon lithologic characters as determined by the writer mentioned. Critical examination of the data upon which he has founded his groupings shows that, although unnamed, they do not differ essentially from those previously recognized by other investigators who have been in the region, and who have based their determinations, not only on lithologic, but upon broad stratigraphic, faunal, and historic grounds.

Adams' main contention is to draw for the major subdivisions of the section lines that are slightly different from those previously recognized.

Data which he presents appear to give results quite diverse from what he manifestly intended. For the major subdivisions they militate strongly against his conclusions rather than support them. Moreover, Girty's elaborate tables showing the detailed vertical ranges of the fossils clearly not only do not strengthen Adams' position, but very greatly weaken it; and, on the other hand, furnish the strongest evidence yet published that the main divisions previously recognized are very nearly the proper ones. For Adams' chief conclusion the introducing of the faunal evidence is very unfortunate.

The relationships of the so-called Permian of Kansas to the Red Beds are of great significance. Mr. Adams states that—

the distinctions which have thus far been outlined in Kansas do not hold when the rocks are followed southwestward along their strike into the Indian Territory. Approximately along the Arkansas River, or a little south of that stream, the interstratified limestones disappear from the section, and the formations are accordingly shales and sandstones. Moreover, the rocks in the Indian Territory gradually assume a red color in the higher portion of the section, the line of transition to this color being diagonal to the strike. The Red Beds of Kansas belong to this phase.

Regarding the biotic characters Dr. Girty aptly observes that—

the constituents of the Kansas section consist of alternations of limestone and shale, the latter sometimes containing more or less sandstone. During limestone-making periods invertebrate life was varied and abundant; but few of the mud beds, however, appear to have supported animal life. With some exceptions, therefore, only alternate formations are represented by fossil faunas. The youngest fauna obtained is that of the Marion formation, the Wellington having so far proved devoid of marine fossils. The oldest fauna occurs in the Cherokee shales. It is rather meager, so far as known, but it is probable that numerous additions to our list of species can be obtained at favorable localities. Many of the faunas in the section are large and varied, and while all are not equally extensive, I believe that their uniform excellence is far above the average in sections of equal length.

The value attaching to tables such as the one given depends upon the consideration of several factors. The most important among these appear to be the following:

1. The precision with which the collections are located in the generalized section.
2. The consistent accuracy of the determination of species.
3. The variety and abundance of the formational faunas, and the uniformity maintained in these particulars throughout the section.
4. The completeness with which the faunas are represented in these particulars by the collections.

With all these elements favorable, the sequence of faunas and the range of

species shown by this table should be applicable to a considerable area. Its applicability should, indeed, be limited only by facts of identity of horizon and of basinal boundary.

The tabulation of the species according to their occurrence in the minor formations, some fifty of which are recognized in the 2,000 feet of strata, is essentially a repetition, though perfectly independent, of a similar attempt made a decade ago. It is mainly valuable in substantiating the conclusions arrived at at that time regarding the serial grouping of the various lithologic units of the region.

Mr. White's record of the fossil plants, while necessarily meager, is important as the most complete list of species yet published. It affords many suggestive considerations. The author states that—

nearly all the specimens here discussed are of Coal Measures (Pennsylvanian) age. But very little plant material from beds of the supposed Permian of Kansas has yet been described. The University of Kansas, in connection with its geological survey of the state, has accumulated more or less fossil plant material in its paleontological collections. This paleobotanical material, which has been sought with especial regard to the Permian problem, is now being studied by Mr. E. H. Sellards, and will probably receive systematic treatment and illustration in one of the proposed volumes of the state university survey. The writer is under obligation to Mr. Sellards and to the university for specimens, particularly of Permian types, submitted for examination or donated to the collections of the United States National Museum. This material, so far as it has anywhere yet been published, is included in this summary; but such species in the material communicated by Mr. Sellards as are new to science or have not previously been discovered in the state obviously could not be included without unfairly anticipating their full description by him and impairing the originality of his publication. Accordingly, in dealing with the supposed Permian flora in particular, which he has been so successful in discovering, all paleontological discussion of the material is here omitted.

The plant remains throw no light on the possible subdivisions of the section; and the whole Lower and Upper Coal Measures are merely said to represent the Allegheny section of Pennsylvania.

Professor Prosser's article on the Permian, while adding nothing new to the subject, is important as affording a connected review of all that has been written on the Kansas Permian beds during the past few years. A considerable portion of the paper is taken up in defending former positions this author has taken. Concerning the retention of certain names the author mentioned, without bringing out any additional reasons, quotes a final rule of the Federal Survey. Without questioning the good taste of such proceeding, or the fact that it adds no weight whatever to a logical conclusion, it is not probable that any organization on the face of

the earth can fix nomenclature until all evidence has been thoroughly sifted.

In discussing the nomenclature of the Upper Carboniferous system, Professor Prosser falls into the same error that he has previously, notwithstanding the fact that his statements have been corrected, and he furthermore does not appear to have yet grasped the points of that contention. However, as these are taken up in another connection, they need not be considered in detail here. If he recognizes, as he states, the uppermost series of the Carboniferous as the Permian, it seems wholly unnecessary to say the least, to enter into a prolix argument as to whether Oklahoman series and Cimmaron series are correctly determined or not. Taking the first-mentioned position, most persons would pass the second over without argument. The fact that the last-named terms are re-argued by him at length would appear to indicate that the author is not so sure, after all, that they are not valid.

As to the dividing line between the Permian and Upper Carboniferous it is stated that—

it is clearly shown by Beede and Sellards that the Wreford limestone is a conspicuous formation which may be readily followed from southern Nebraska across northern and central Kansas, at least into the southern part of the latter state. This is fortunate in case the Wreford limestone be considered the base of the Permian, because it will afford a marked lithologic break for the line of division between the Permian and the Carboniferous.

Summing up the main features of these papers, it appears (1) that in Kansas there are recognizable in the Carboniferous section, which is more than 2,000 feet thick, four well-defined subdivisions; (2) that the lines of separation of these major members are essentially those which have been located before and generally agreed upon by those who have worked in the Kansas field during the past decade; (3) that the only matter to be now settled is one of nomenclature—the application of simple geographic names to provincial series. There have been a sufficient number of titles already proposed, which cover very closely, if not quite, the subdivisions recognized. The time is ripe to do away with all petty technicalities, and adopt permanent names. This may easily be done even at the risk of modifying somewhat the original meanings; such a course is far more preferable than the proposal of a new set of titles, which in the end are likely to become synonyms.

In the articles mentioned above numerous references are made to the general Carboniferous section and to sections so widely separated as Pennsylvania and New Mexico. Without intervening sections or some

description of them the comparisons are of small use as elucidating Kansas geology. However, it brings up the question of general classification of the American Carboniferous deposits. If we parallel these provincial sections as types—(I) western Texas, and southern New Mexico, (II) eastern Kansas and Missouri and (III) West Virginia and Pennsylvania—we get something of the following arrangement:

	TIME-DIVISIONS	PROVINCIAL SERIES		
		I	II	III
CARBON-IFEROUS	Late.....	Cimmaron Wanting?	Cimmaron Oklahoman Wanting?	Permian
	Mid.....	Maderan Manzanon Wanting?	Missouran Des Moines Arkansan	Pennsylvanian
	Early.....	Wanting? Socorran	Mississippian	(Poconoan?)

On the whole, it seems advisable not to attempt the impossible by stretching any one provincial series over the entire continent. A general continental section based upon the somewhat elastic time divisions is about as far in the present state of our knowledge as exact paralleling can go.

CHARLES R. KEYES.

*Revised Nomenclature of the Geological Formation of Ohio.* Bulletin No. 7, Fourth Series, Geological Survey of Ohio; November, 1905. By CHARLES S. PROSSER. Pp. xv+36.

This bulletin is prefaced by the state geologist, Professor Edward Orton, Jr., giving a refreshing account of the Ohio Legislature setting aside a definite appropriation for purely stratigraphic work, realizing that the proper development of economic resources is directly dependent upon the accurate knowledge of the formations and geological structure of the state. Another feature of the introduction is the statement of an excellent method of dealing with the various requests made to the state geologist to undertake local and private investigations, analyses, etc.

The body of the bulletin is a further elaboration by the author of his article in Vol. XI of the *Journal of Geology*, bringing the subject up to date, but which will receive further attention as the work of the Ohio Survey continues. The author gives a table of the old and new classifications of the formations of the state, and in characteristic manner reviews the literature on the subject and adds the results of his own field studies.